

What is claimed is:

1. A semi-transmissive type liquid crystal display device comprising:

5 a semi-transmissive type liquid crystal display cell having a lower substrate, an upper substrate which constitutes an observation side, a liquid crystal layer sandwiched between the lower substrate and the upper substrate, a lower orientation film which is formed over a surface of the lower substrate which
10 is brought into contact with the liquid crystal layer, and an upper orientation film formed over a surface of the upper substrate which is brought into contact with the liquid crystal layer;

15 an upper polarizer arranged at a side of the upper substrate opposite to the liquid crystal layer;

 an upper $\lambda/2$ phase difference plate arranged between the upper polarizer and the upper substrate;

 an upper $\lambda/4$ phase difference plate arranged between the upper $\lambda/2$ phase difference plate and the upper substrate;

20 a lower polarizer arranged at a side of the lower substrate opposite to the liquid crystal layer;

 a lower $\lambda/2$ phase difference plate arranged between the lower polarizer and the lower substrate;

25 a lower $\lambda/4$ phase difference plate arranged between the lower $\lambda/2$ phase difference plate and the lower substrate; and

an optical film having negative uniaxial double refractive index ellipsoids arranged between the lower $\lambda/4$ phase difference plate and the lower substrate, wherein

5 a twist angle of the liquid crystal layer is larger than 0° and equal to or smaller than 90° ,

the orientation axis direction of the optical film having negative uniaxial double refractive index ellipsoids is arranged within a range of -5° to $+5^\circ$ with respect to the direction which is rotated by 90° in the clockwise direction from a resultant 10 vector of the orientation axis direction of the upper orientation film and the orientation axis direction of the lower orientation film of the liquid crystal display cell, and

15 a phase lagging axis of the lower $\lambda/4$ phase difference plate is arranged within a range of -10° to $+10^\circ$ with respect to the orientation axis direction of the optical film having negative uniaxial double refractive index ellipsoids, and a phase lagging axis of the upper $4/\lambda$ phase difference plate is arranged within a range of -5° to $+5^\circ$ with respect to the direction which is rotated 90° in the clockwise direction from a resultant vector 20 of the orientation axis direction of the upper orientation film and the orientation axis direction of the lower orientation film of the liquid crystal display cell.

2. A semi-transmissive type liquid crystal display device according to claim 1, wherein the lower $\lambda/4$ phase difference 25 plate is formed of a three-dimensional refractive index control

type phase difference plate having a N_z coefficient of $-1 \leq N_z < 1$, wherein the N_z coefficient indicates a three-dimensional refractive index.

3. A semi-transmissive type liquid crystal display device
5 according to claim 1, wherein the upper $\lambda/4$ phase difference plate is formed of a three-dimensional refractive index control type phase difference plate having a N_z coefficient of $-1 \leq N_z < 1$, wherein the N_z coefficient indicates a three-dimensional refractive index.

10 4. A semi-transmissive type liquid crystal display device according to claim 1, wherein both of the lower $\lambda/4$ phase difference plate and the upper $\lambda/4$ phase difference plate are formed of a three-dimensional refractive index control type phase difference plate having a N_z coefficient of $-1 \leq N_z < 1$, wherein
15 the N_z coefficient indicates a three-dimensional refractive index.

5. A semi-transmissive type liquid crystal display device according to claim 1, wherein the liquid crystal display device includes a backlight.

20 6. A liquid crystal display device comprising:
a semi-transmissive type liquid crystal display cell having a lower substrate, an upper substrate which constitutes an observation side, a liquid crystal layer sandwiched between the lower substrate and the upper substrate, a lower orientation
25 film which is formed over a surface of the lower substrate which

is brought into contact with the liquid crystal layer, and an upper orientation film formed over a surface of the upper substrate which is brought into contact with the liquid crystal layer;

5 an upper polarizer arranged at a side of the upper substrate opposite to the liquid crystal layer;

 an upper $\lambda/2$ phase difference plate arranged between the upper polarizer and the upper substrate;

10 an upper $\lambda/4$ phase difference plate arranged between the upper $\lambda/2$ phase difference plate and the upper substrate;

 a lower polarizer arranged at a side of the lower substrate opposite to the liquid crystal layer;

 a lower $\lambda/2$ phase difference plate arranged between the lower polarizer and the lower substrate;

15 a lower $\lambda/4$ phase difference plate arranged between the lower $\lambda/2$ phase difference plate and the lower substrate; and
 an optical film having negative uniaxial double refractive index ellipsoids arranged between the lower $\lambda/4$ phase difference plate and the lower substrate, wherein

20 a twist angle of the liquid crystal layer is 0° ,
 the orientation axis direction of the optical film having negative uniaxial double refractive index ellipsoids is arranged within a range of -5° to $+5^\circ$ with respect to the orientation axis direction of the lower orientation film of the liquid crystal display cell, and

a phase lagging axis of the lower $\lambda/4$ phase difference plate is arranged within a range of -10° to $+10^\circ$ with respect to the orientation axis direction of the optical film having negative uniaxial double refractive index ellipsoids, and a phase 5 lagging axis of the upper $\lambda/4$ phase difference plate is arranged within a range of -5° to $+5^\circ$ with respect to the orientation axis direction of the upper orientation film of the liquid crystal display cell.

7. A semi-transmissive type liquid crystal display device 10 according to claim 6, wherein the lower $\lambda/4$ phase difference plate is formed of a three-dimensional refractive index control type phase difference plate having a N_z coefficient of $-1 \leq N_z < 1$, wherein the N_z coefficient indicates a three-dimensional refractive index.

15 8. A semi-transmissive type liquid crystal display device according to claim 6, wherein the upper $\lambda/4$ phase difference plate is formed of a three-dimensional refractive index control type phase difference plate having a N_z coefficient of $-1 \leq N_z < 1$, wherein the N_z coefficient indicates a three-dimensional 20 refractive index.

9. A semi-transmissive type liquid crystal display device according to claim 6, wherein both of the lower $\lambda/4$ phase difference plate and the upper $\lambda/4$ phase difference plate are formed of a three-dimensional refractive index control type phase 25 difference plate having a N_z coefficient of $-1 \leq N_z < 1$, wherein

the N_z coefficient indicates a three-dimensional refractive index.

10. A semi-transmissive type liquid crystal display device according to claim 6, wherein the liquid crystal display device
5 includes a backlight.